

### **REMARKS**

Claims 22, 26, and 93-95 are pending and under consideration. Claims 93-95 have been amended herein. Claims 96-97 have been added. The amendments do not add new matter. The amendments to claims 93-95 do not add new matter because they cancel clauses from the claims, or recite an element directed at a complementary sequence (claim 95).

Newly added claim 96 is supported, for example, by claim 1 as filed, as well as by Page 29, lines 28-36, which clarifies that the lov-1 protein is a membrane bound protein with a serine-threonine rich amino terminus. Newly added claim 96 is also supported by page 31, lines 3-7, which indicate that a lov-1 protein can be identified by its ability to rescue sy552 mutants. Newly added claim 97 is supported by page 36, lines 24-31, which indicate that mutant sy582, which failed to rescue sy552 mutants, does not include the amino acids encoded by nucleotides 2267 to 1209 of SEQ ID NO:3. This identifies this deleted portion of nucleotides 2267-1209 of SEQ ID NO:3 as including a critical domain for Lov-1 function. After entry of the present Amendment, claims 22, 26, and 93-97 will be pending and under consideration.

It is noteworthy that the Office Action indicates that the subject matter of parts (a) and (b) of the pending independent claims appears to be allowable (See page 6 of the pending Office Action).

### **Rejection Under 35 U.S.C. § 112, First Paragraph**

Applicants respectfully traverse the rejection of claims 22, 26 and 93-95 under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. The Office Action acknowledges that the specification adequately describes SEQ ID NO:3, a nucleotide sequence that encodes a LOV-1 protein, and SEQ ID NO:15, encoding a mutant LOV-1 protein. However, the Office Action alleges that the specification does not disclose other nucleotides encompassed by the claims that encode a LOV-1 protein and that are fully complementary to at least one of the exons of SEQ ID NO:3 under conditions of at least moderate stringency. In support of its allegation, the Office Action alleges that a skilled

artisan would not know whether DNA sequences that structurally fall within the claim have the property of directing normal location of vulva and normal response male sensory behaviors. The Office Action also supports its allegation by indicating that the prior art teaches that there would be sequence variation among cDNAs encoding LOV-1, but the specification allegedly does not teach any variants other than SEQ ID NOs:3 and 15.

Claims 93-95, from which the remaining rejected claims depend, have been amended herein to recite nucleic acid molecules that include a sequence of nucleotides encoding a LOV-1 protein that includes the sequence of amino acids encoded by the sequence set forth in SEQ ID NO:3 (claims 93-94) or SEQ ID NO:15 (claim 95), or complements thereof. Accordingly, as acknowledged in the Office Action, these claims are adequately described by the specification as filed. Therefore Applicants respectfully traverse the rejection of claims 22, 26 and 93-95 under 35 U.S.C. §112, first paragraph.

Regarding newly added claims 96-97, it is noteworthy that these claims recite numerous structural as well as functional limitations that are provided by the specification. For example, claim 96, from which claim 97 depends, recites that the sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 protein, is fully complementary to at least one of the exons set forth in SEQ ID No. 3. Furthermore, claim 96 recites that the sequence of nucleotides hybridizes to the nucleotide sequence of SEQ ID NO:3 under conditions of high stringency, and is present in the genome of a *Caenorhabditis* nematode. Finally, claim 96 recites that the sequence encodes a transmembrane protein having a serine-threonine rich extracellular domain. In addition to these structural elements, claim 96 recites that the sequence of nucleotides encode a LOV-1 protein, which when expressed in *Caenorhabditis elegans*, rescues a sy552 mutant by exhibiting normal location of vulva and normal response male nematode sensory behaviors. Claim 97 recites that the sequence includes nucleotides 2267-1209 of SEQ ID NO:3.

The structural elements in newly added claims 96-97, are supported by the specification, which utilizes sequence analysis and *C. elegans* genetics to thoroughly characterize LOV-1

proteins encoded by the claimed nucleic acid sequences. For example, claim 1 as filed, as well as Page 29, lines 28-36, clarify that the LOV-1 protein is a membrane bound protein with a serine-threonine rich amino terminus. Furthermore, the specification characterizes nucleotides encoding the LOV-1 protein by analyzing the ability of various deletion mutants to rescue a sy552 mutant. For example, Figure 2 illustrates that the plov-1.2, plov-1::GFP1, plov-1.3, and sy582 deletion mutants do not rescue a sy552 mutant (See also, page 32, lines 17-28; page 55, lines 19-21; and page 36, lines 11-31), thereby identifying important regions of the LOV-1 protein that are absent in these mutants. Regarding newly added claim 97, nucleotides 2267-1209 of SEQ ID NO:3 are shown in the specification to include an essential region to LOV-1 function (See e.g., page 36, lines 31). Therefore, the specification uses powerful genetics techniques and sequence analysis to dissect the structure of the LOV-1 protein, such that a skilled artisan can identify important nucleotides encoding the LOV-1 protein, and therefore can identify nucleotide sequences that fall within the claimed invention.

In re Application of:

Sternberg and Barr

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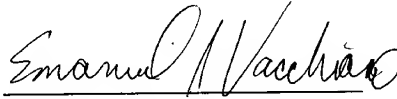
### CONCLUSION

In summary, for the reasons set forth herein, Applicants maintain that claims 22, 26 and 93-97 clearly and patentably define the invention, respectfully request that the Examiner reconsider the grounds for rejection set forth in the Office Action, and respectfully request the allowance of the claims which are now pending.

If the Examiner would like to discuss any of the issues raised in the Office Action, Applicant's representative can be reached at (858) 677-1456. Please charge any additional fees, or make any credits, to Deposit Account No. 50-1355.

Respectfully submitted,

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